AMENDMENTS TO THE CLAIMS

This Listing of the Claims will replace all prior versions, and listings, of claims in this application.

Listing of the Claims:

1. (Previously Presented) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements, coupled to the first memory, the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms and storing the R-matrix to contiguous locations within the first memory,

a second processing element coupled with the first memory,

the second processing element accessing the R-matrix from said contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,

a second memory coupled with the set of first processing elements and a third processing element,

the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users,

the third processing element placing the gamma-matrix in the second memory,

wherein the gamma-matrix is a composition of a complex conjugate of the code associated with one user and a complex conjugate of the codes associated with one or more other users.

2. (Canceled)

3. (Previously Presented) The device of claim 1, wherein said one or more first processing elements access said gamma-matrix from said second memory to generate the R-matrix.

4. (Previously Presented) The device of claim 1, comprising

the third processing element generating the gamma-matrix and placing that matrix in contiguous locations within the second memory,

the set of first processing elements accessing the gamma-matrix from contiguous locations within the second memory and generating the R-matrix.

5. (Previously Presented) The device of claim 1, comprising

a multi-port switch coupled to the third processing element and to the second memory,

wherein the third processing element places the gamma-matrix in the second memory via the multi-port switch.

6. (Canceled).

7. (Previously Presented) The device of claim 1, wherein the third processing element updates the gamma-matrix as users are added or removed from the spread spectrum system.

8. (Previously Presented) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements, coupled to the first memory, the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms and storing the R-matrix to contiguous locations within the first memory,

a second processing element coupled with the first memory,

the second processing element accessing the R-matrix from said contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,

a second memory coupled with the set of first processing elements and a third processing element,

the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users,

the third processing element placing the gamma-matrix in the second memory

wherein the set of first processing elements generate the R-matrix as a composition of the gamma-matrix.

9. (Previously Presented) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements coupled to the first memory, the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms and storing the R-matrix to contiguous locations within the first memory,

a second processing element coupled with the first memory,

the second processing element accessing the R-matrix from contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,

a host controller coupled to each of the set of first processing elements, wherein the host controller generates a partitioning of the R-matrix, that partitioning divides the R-matrix

into one or more portions based on a number of users and a number of available processing elements,

the host controller assigns to each first processing element a portion of the R-matrix to generate according to the partitioning,

each of the first processing elements generating the assigned portion of the R-matrix according to the partitioning,

the host controller re-calculates the partitioning of the R-matrix when a user is added or removed from the spread spectrum system, and assigns a new portion of the R-matrix to each first processing element according to that new partitioning.

10. (Original) The device of claim 9, wherein each first processing element places its respective portion of the R-matrix in the first memory according to its respective partition such that each portion of the R-matrix is contiguous with respect to the other portions.

11. (Previously Presented) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements, coupled to a direct memory access engine (hereinafter "DMA engine"), the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms, the DMA engine coupled with the first memory,

the DMA engine storing the R-matrix to contiguous locations within the first memory,

a second processing element coupled with the first memory,

the second processing element accessing the R-matrix from contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,

a host controller coupled to each of the set of first processing elements, the host controller generating a partitioning of the R-matrix, that partitioning divides the R-matrix into one or more portions based on a number of users and a number of available processing elements,

the host controller assigning to each first processing element a portion of the R-matrix to generate according to the partitioning,

each first processing element generating the assigned portion of the R-matrix according to the partitioning,

the host re-calculating the partitioning of the R-matrix when a user is added or removed from the spread spectrum system, and assigning a new portion of the R-matrix to each first processing element according to that new partitioning.

12. (Canceled).

13. (Original) The device of claim 11 comprising

a second memory coupled with the set of first processing elements and a third processing element,

the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users,

the third processing element places the gamma-matrix in the second memory.

14. (Previously Presented) The device of claim 13, wherein

the third processing element generates the gamma-matrix and places that matrix in contiguous locations within the second memory, and

the set of first processing elements accesses the gamma-matrix from contiguous locations within the second memory and generates the R-matrix.

15. (Previously Presented) The device of claim 13, comprising

a multi-port switch coupled to the third processing element and to the second memory,

wherein the third processing element places the gamma-matrix in the second memory via the data switch.

16. (Previously Presented) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements, coupled to a direct memory access engine (hereinafter "DMA engine"), the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms, the DMA engine coupled with the first memory,

the DMA engine storing the R-matrix to contiguous locations within the first memory,

a second processing element coupled with the first memory,

the second processing element accessing the R-matrix from contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,

a second memory coupled with the set of first processing elements and a third processing element,

the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users,

the third processing element placing the gamma-matrix in the second memory

wherein the gamma-matrix is a composition of a complex conjugate of the code associated with one user and a complex conjugate of the codes associated with one or more other users.

17. (Original) The device of claim 13, wherein the third processing element updates the gamma-matrix as users are added or removed from the spread spectrum system.

18. (Previously Presented) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements, coupled to a direct memory access engine (hereinafter "DMA engine"), the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms, the DMA engine coupled with the first memory,

the DMA engine storing the R-matrix to contiguous locations within the first memory,

a second processing element coupled with the first memory,

the second processing element accessing the R-matrix from contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,

a second memory coupled with the set of first processing elements and a third processing element,

the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users,

the third processing element placing the gamma-matrix in the second memory

wherein the set of first processing elements generate the R-matrix as a composition of the gamma-matrix.

19. (Canceled).

20. (Previously Presented) The device of claim 11, wherein DMA engine places each portion of the R-matrix in the first memory according to the partitioning such that the each portion of the R-matrix is contiguous with respect to the adjacent portions.

21. (Previously Presented) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements, coupled to the first memory, the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms and storing that R-matrix to contiguous locations within the first memory,

a second processing element coupled to the first memory, the second processing element accessing R-matrix from said contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,

a second memory coupled with the set of first processing elements and a third processing element,

the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users,

wherein the third processing element places the gamma-matrix in the second memory,

wherein the third processing element updates the gamma-matrix as users are added or removed from the spread spectrum system.

22. (Canceled).

23. (Previously Presented) The device of claim 21, wherein

the third processing element places the gamma-matrix in contiguous locations within the second memory,

the set of first processing elements accessing the gamma-matrix from contiguous locations within the second memory and generating the R-matrix.

24. (Previously Presented) The device of claim 21, comprising

a multi-port switch coupled to the third processing element and to the second memory,

the third processing element places the gamma-matrix in the second memory via the switch.

25. (Previously Presented) The device of claim 27, wherein the gamma-matrix is a composition of a complex conjugate of the code associated with one user and a complex conjugate of the codes associated with one or more other users.

26. (Canceled).

27. (Previously Presented) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements, coupled to the first memory, the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms and storing that R-matrix to contiguous locations within the first memory,

a second processing element coupled to the first memory, the second processing element accessing R-matrix from said contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,

a second memory coupled with the set of first processing elements and a third processing element,

the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users,

said third processing element placing the gamma-matrix in the second memory,

wherein the set of first processing elements generate the R-matrix as a composition of the gamma-matrix.

28. (Original) The device of claim 21, comprising

a direct memory access engine (hereinafter "DMA engine") coupled with the set of second processing elements and the first memory,

the DMA engine placing the R-matrix in contiguous locations within the first memory.

29. (Original) The device of claim 21, comprising

a direct memory access engine (hereinafter "DMA engine") coupled with the third processing element and the second memory,

the DMA engine placing the gamma-matrix in contiguous locations within the second-memory.